

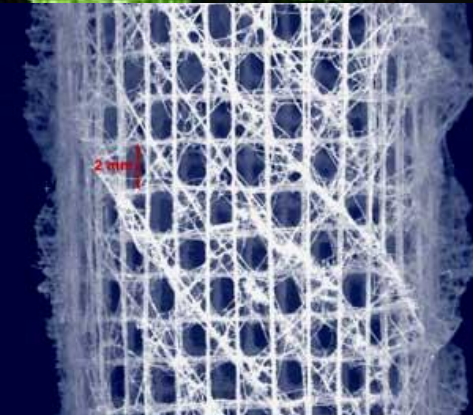
Biomimicry

Innovation Inspired by Nature

IBE Annual Conference

March 6-9, 2008

The Biomimicry Institute



What is Biomimicry?

- *MechanoBiology*
- *Biological Engineering Education and Computational Methods*
- *iGEM and Synthetic Biology*
- *Biology-Inspired ...*
 - *Nanotechnology*
 - *Materials and Molecular Engineering*
 - *Informatics*
 - *Imaging and Optical Sensing*
 - *Sensors*
 - *Tissue and Cellular Engineering*
- *Engineering Microfabricated Biodevices*
- *Biofuels & Bioproducts*
- *Bioprocessing & Bioproducts*
- *Engineering Metabolism and Microbial Conversion*
- *Ecological and Environmental Engineering*
- *Biological Engineering Design*
- *BioBusiness Nexus*



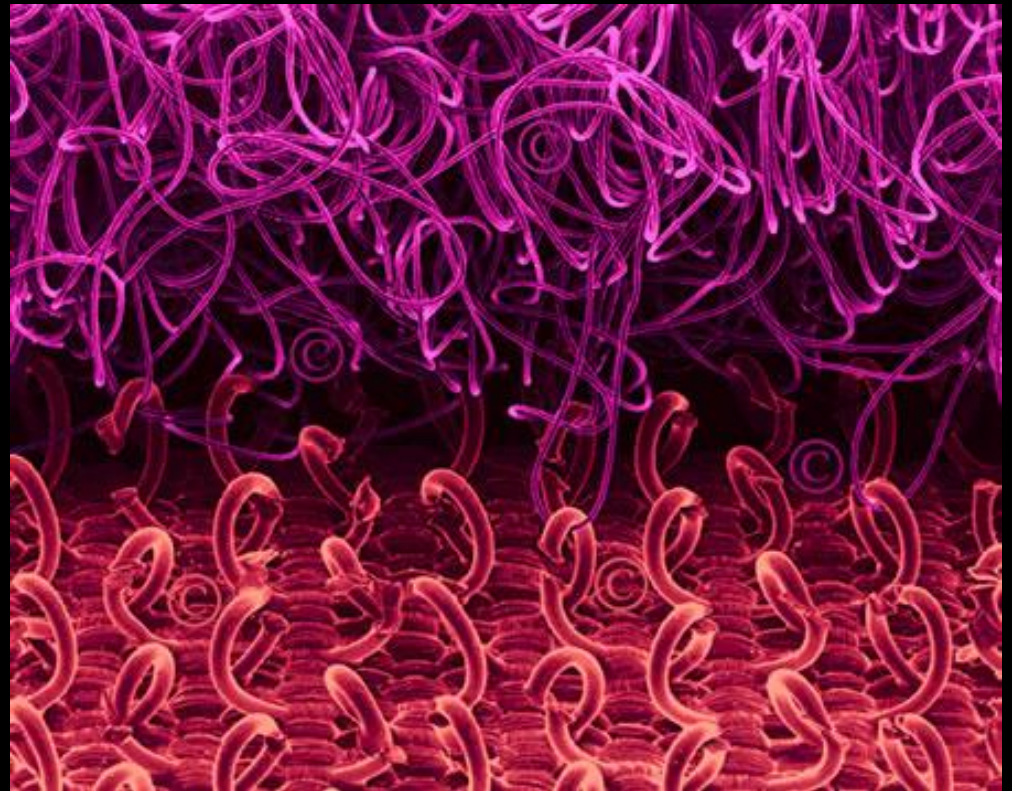
What is Biomimicry?

“bio” = life, living things

“mimicry” = copying, emulating

*Biomimicry is a design tool
based on emulating the
strategies used by living things.*

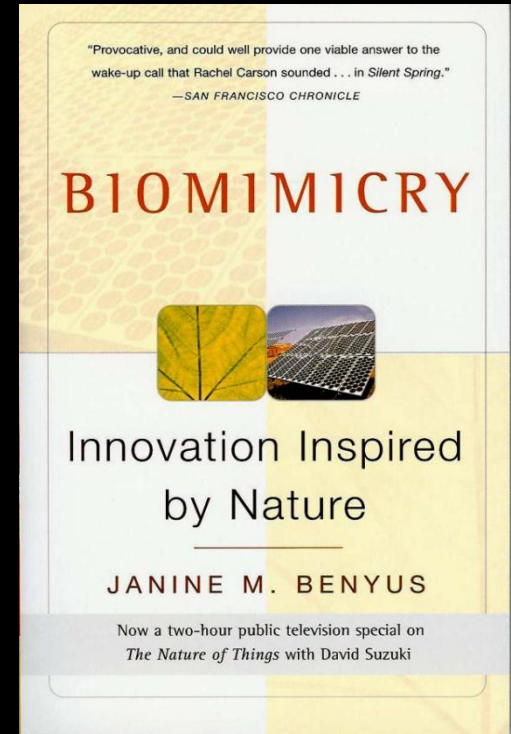








What is Biomimicry?

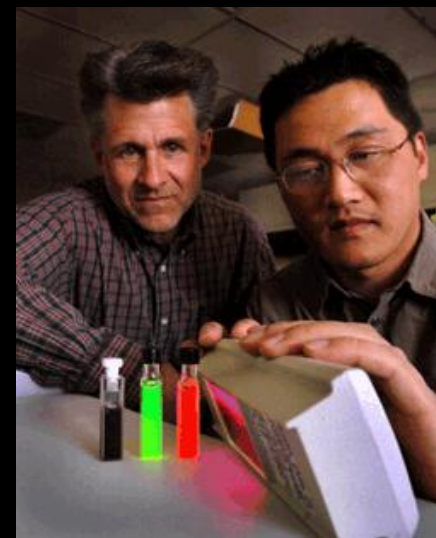


“Biomimicry is the conscious emulation of nature’s genius.”

~Janine Benyus

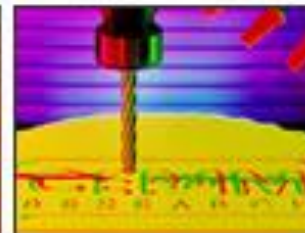
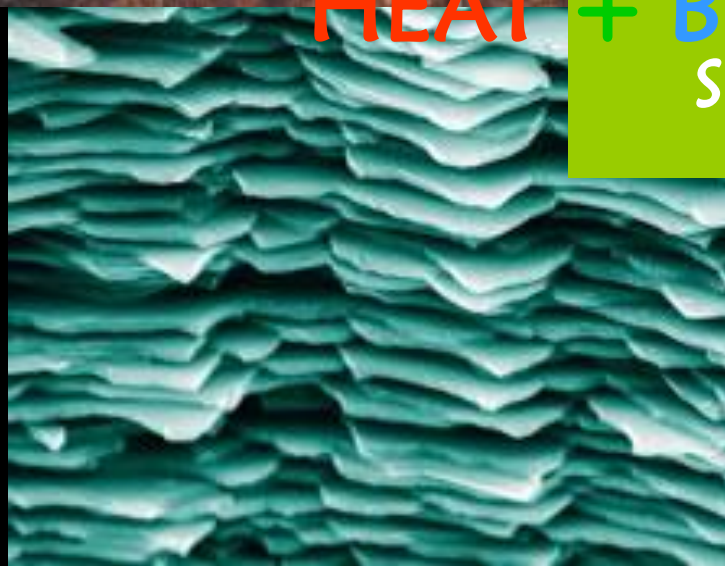
Why should we emulate nature?

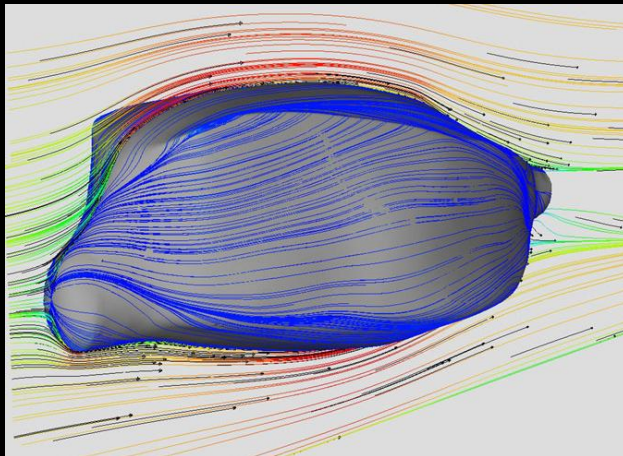




HEAT + BEAT + TREAT

Sandia National Laboratory





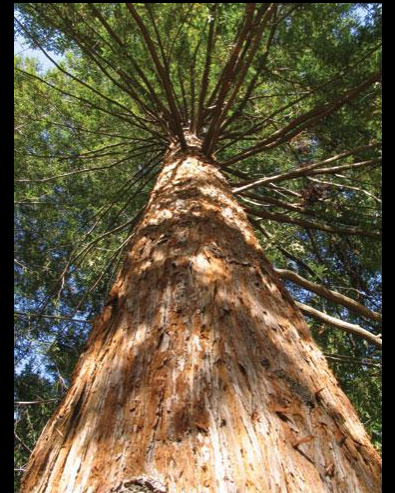
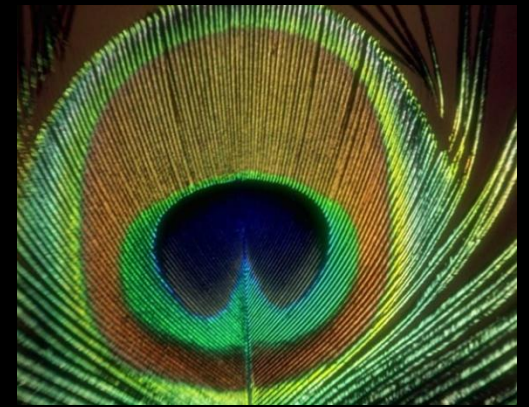
Mercedes-Benz Bionic Concept Car



Why should we emulate nature?

Organisms in nature face the same challenges we do, but they meet them *sustainably*.

- Handle forces
- Distribute energy safely
- Glue things together
- Move water
- Create color



Why should we emulate nature?



What if we don't?



How do we emulate nature?

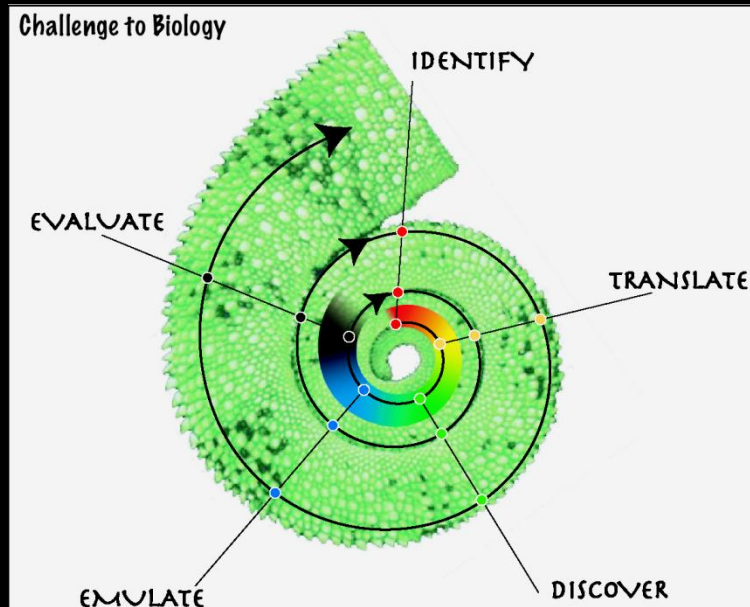
Look at nature as

- Model
- Measure
- Mentor

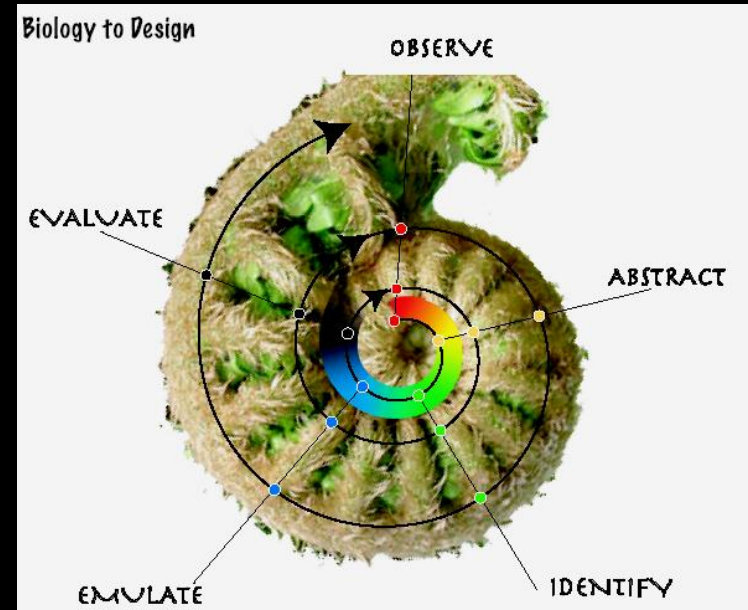


Nature as model, measure, mentor

Challenge to Biology



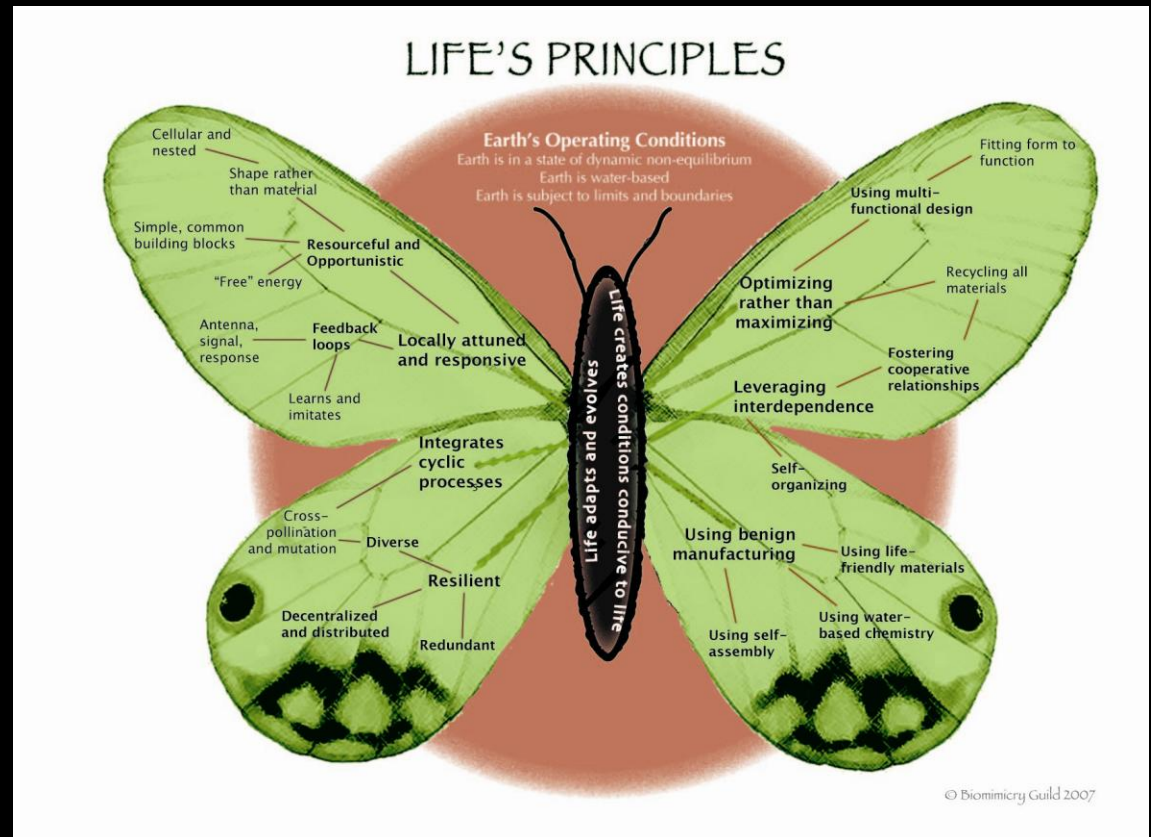
Biology to Design



Nature as model, **measure**, mentor

Life's Principles

How life has sustained on earth for the past 3.85 billion years



Nature as model, measure, mentor



*“Biomimicry is a new way of viewing and valuing nature, based not on what we can **extract** from the natural world, but on what we can **learn** from it.”*

~ Janine M. Benyus

Biomimicry case studies



Forms



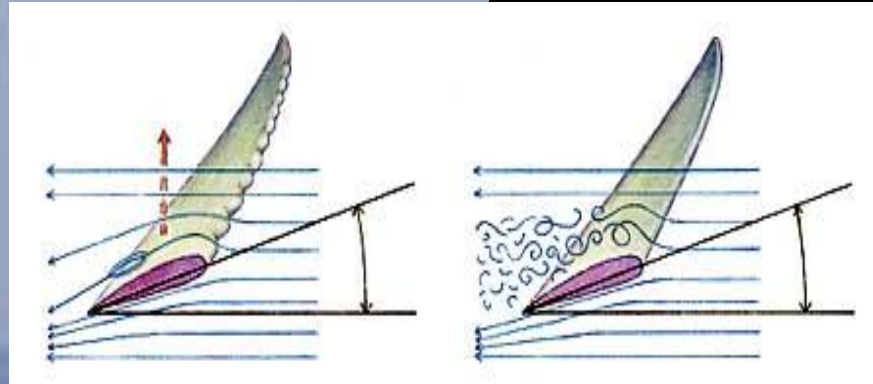
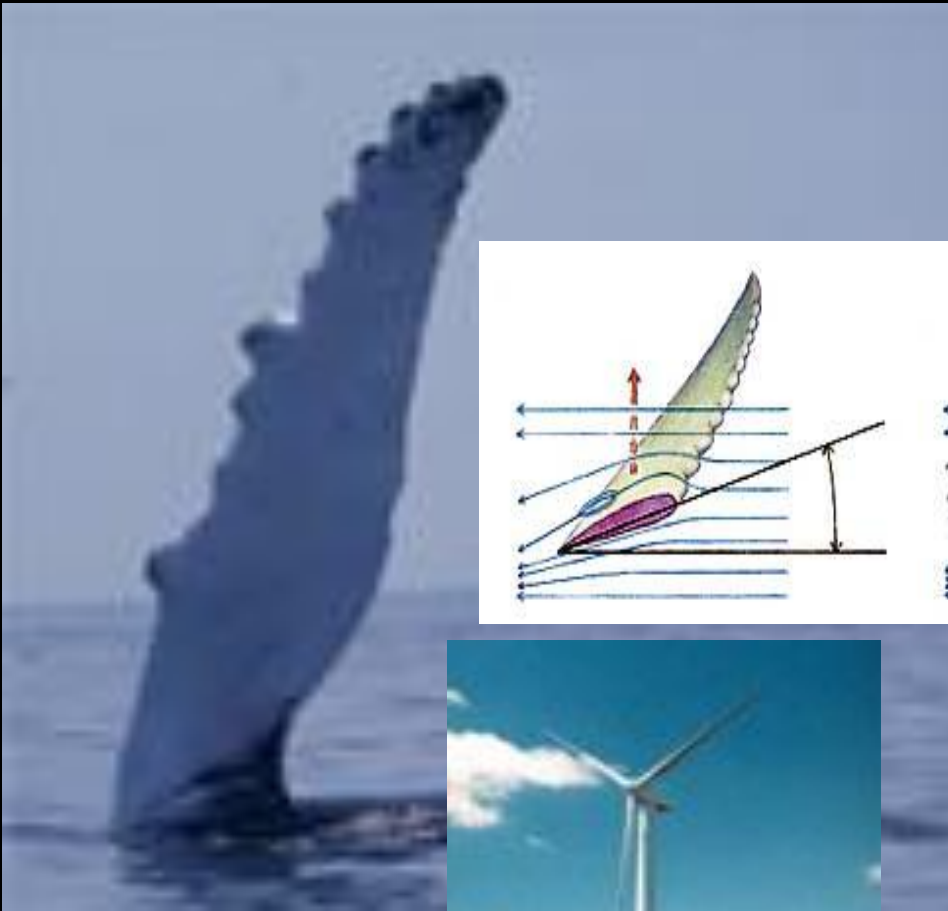
Processes



Ecosystems

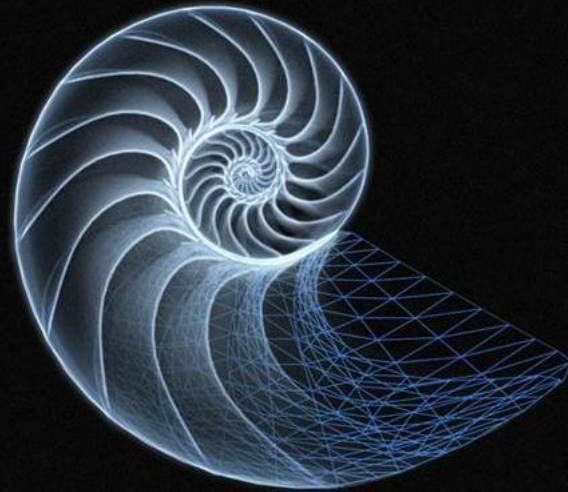
Emulating form

- Fits form to function



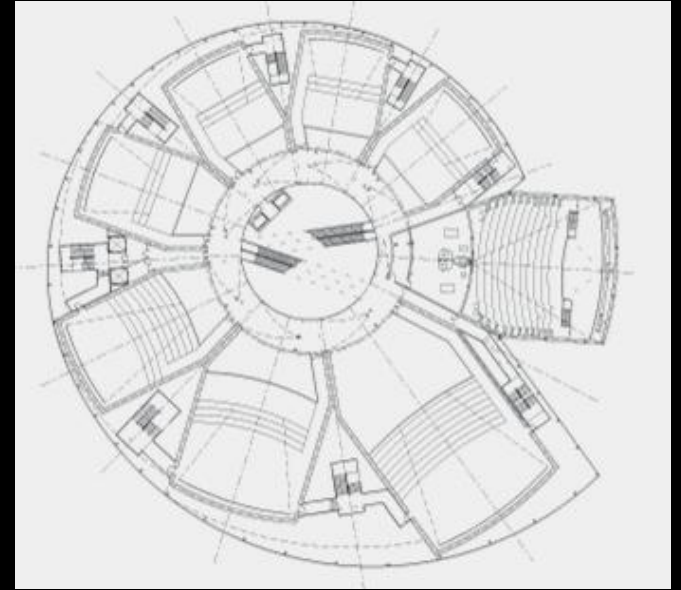
WhalePower Corp.





Emulating form

- Uses shape rather than material



Wilkinson Eyre Architects





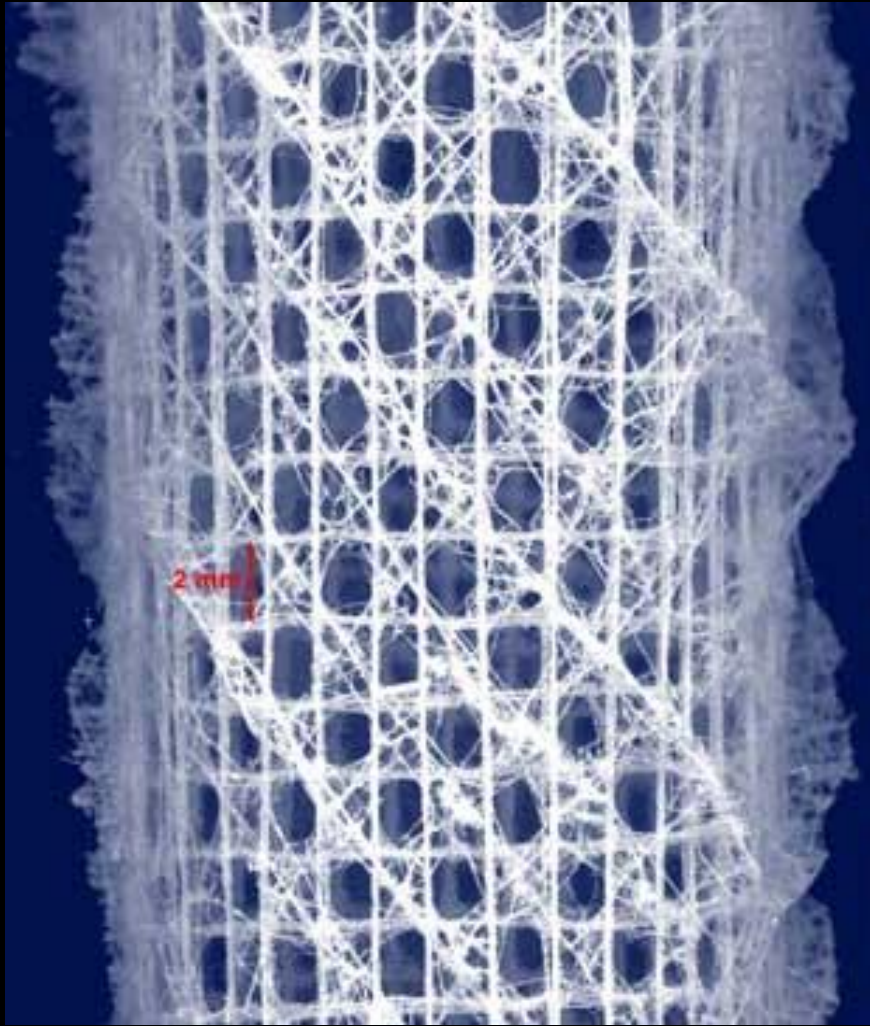
Emulating form

- Uses shape rather than material



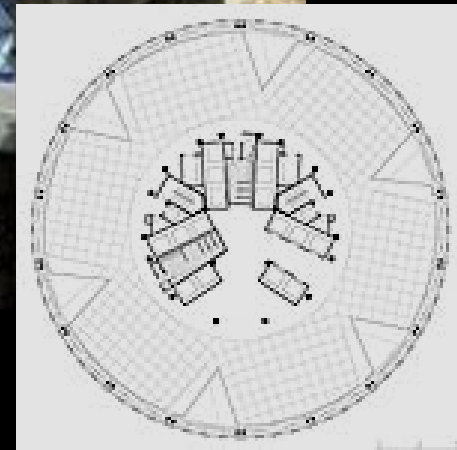
Auxetic Technologies





Emulating form and process

- Uses free energy
- Multi-functional



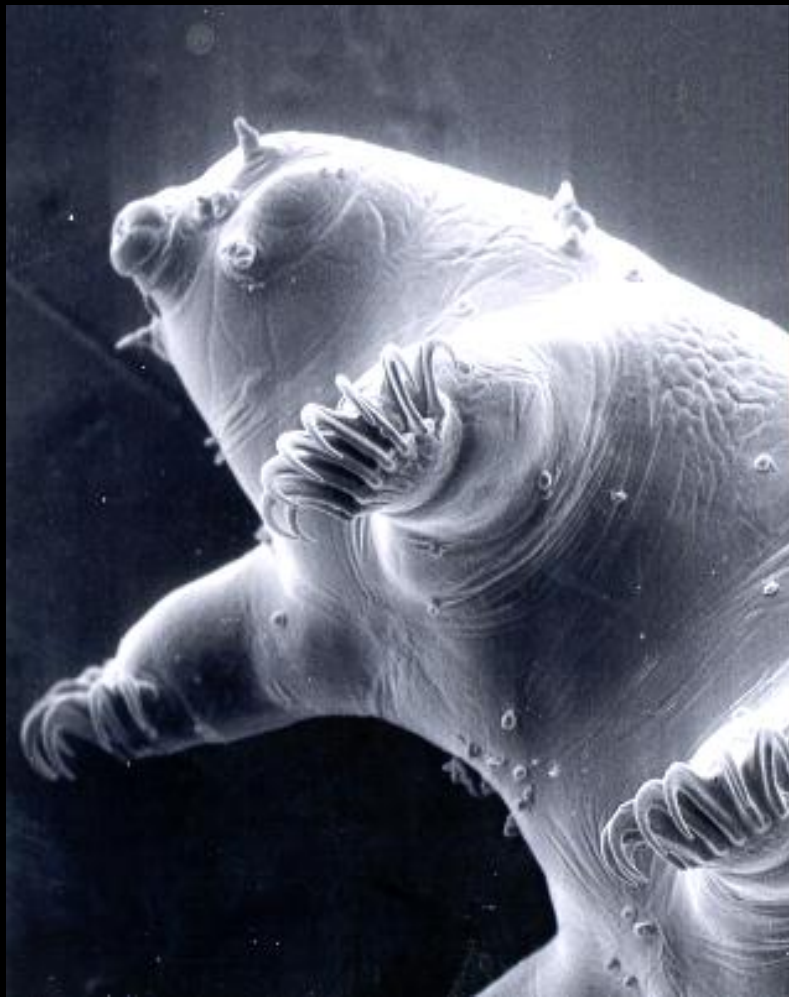
Foster and Partners Architecture

Emulating process

- Decentralized and distributed
- Diverse

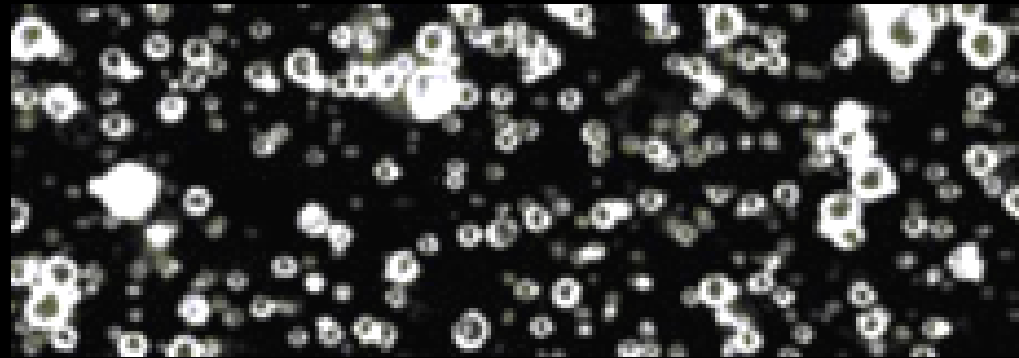


John Todd Ecological Design, Inc.



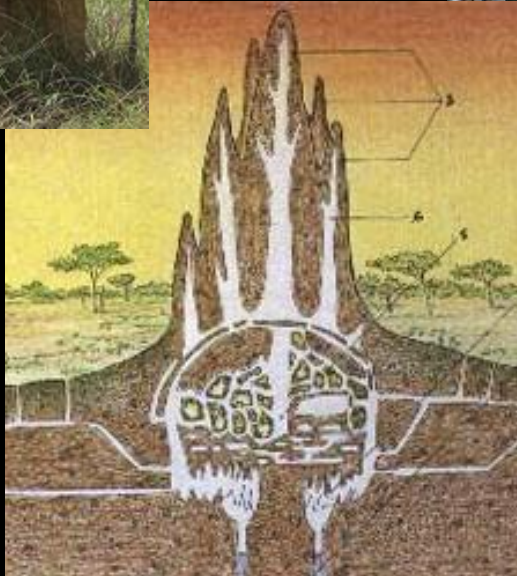
Emulating process

- Benign manufacturing



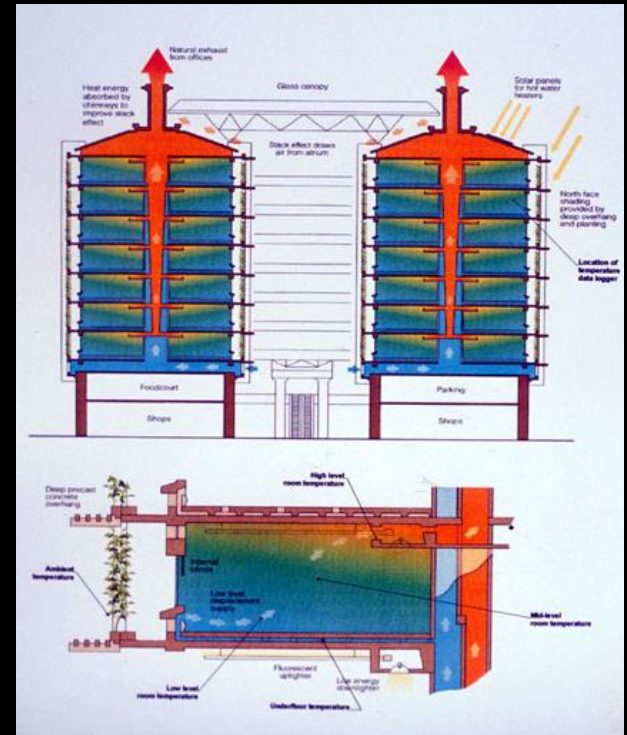
Cambridge Biostability Limited





Emulating process

- Fits form to function
- Uses free energy

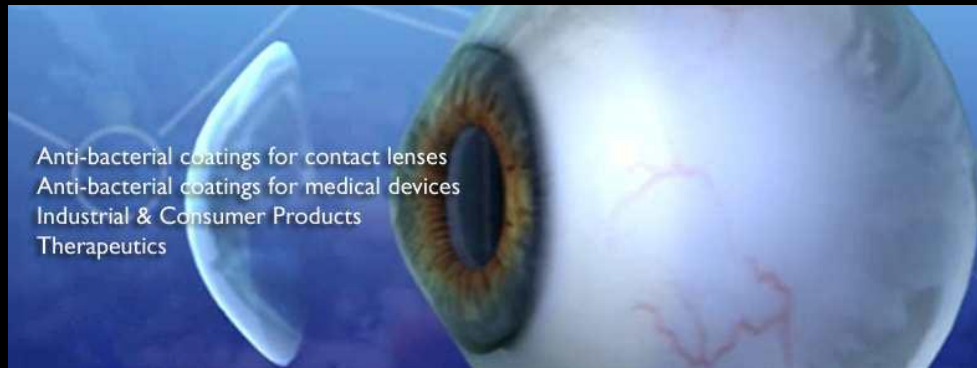


Pearce Partnership

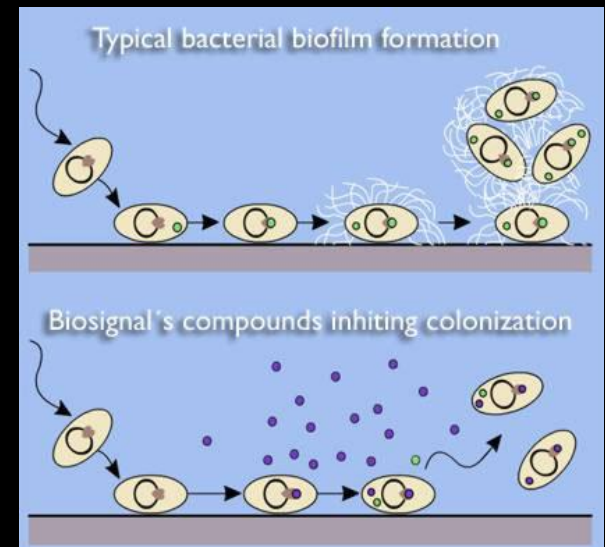


Emulating process

- Detects feedback



Anti-bacterial coatings for contact lenses
Anti-bacterial coatings for medical devices
Industrial & Consumer Products
Therapeutics



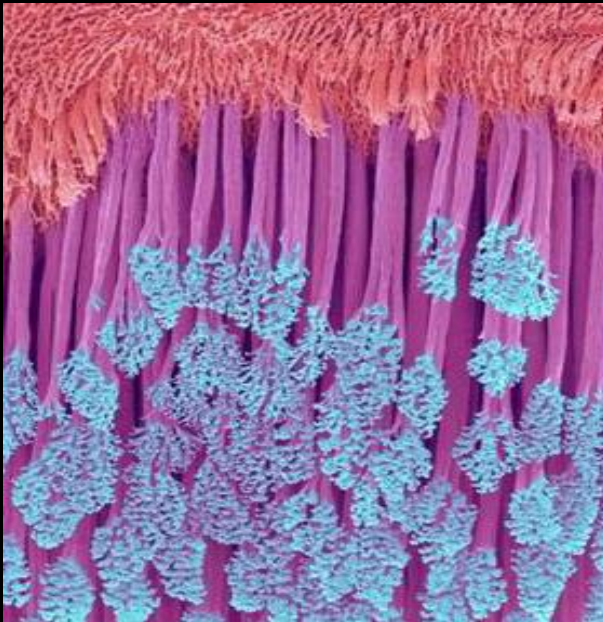
Bio Signal

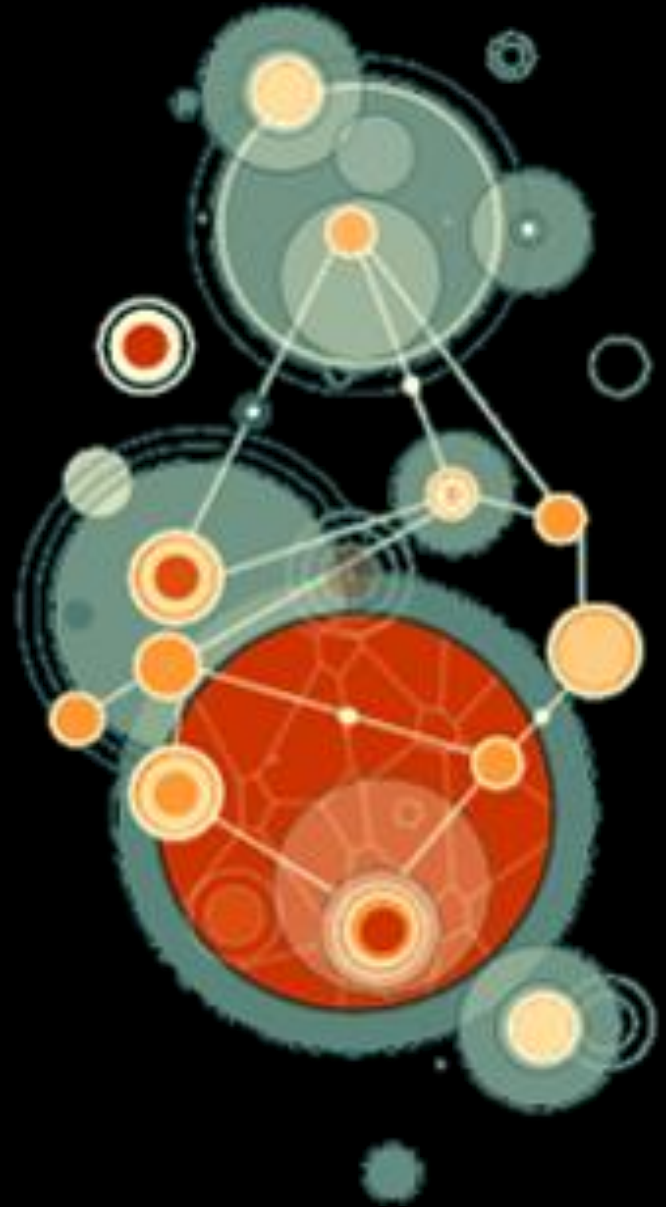
Emulating ecosystem

- Interconnected and interdependent

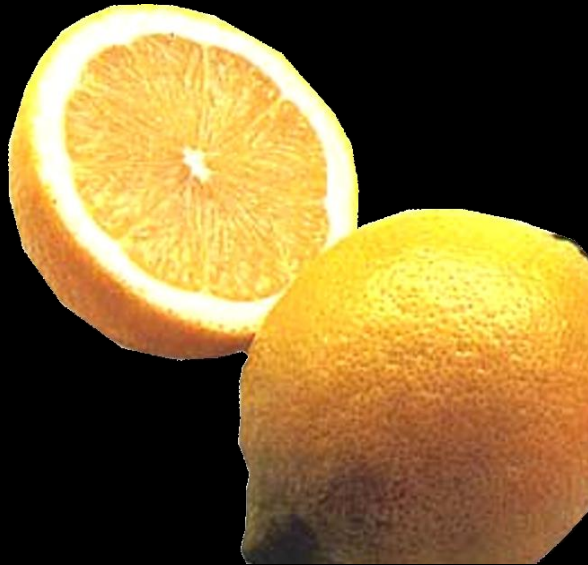


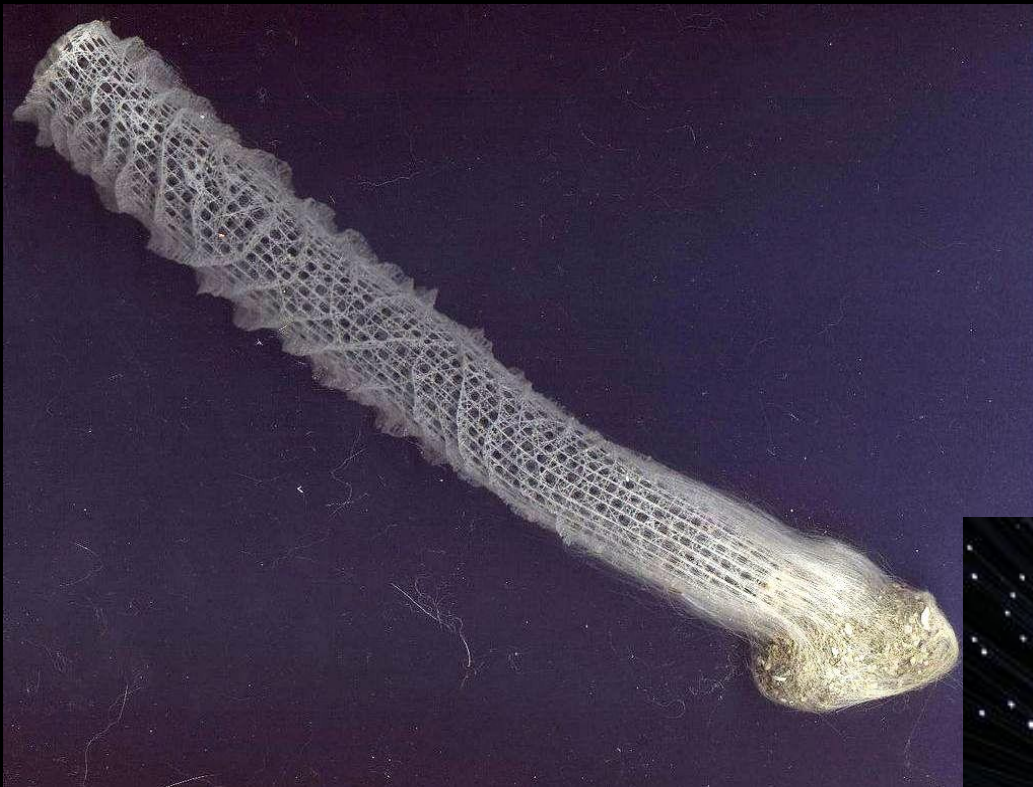
Hartberg Ecopark

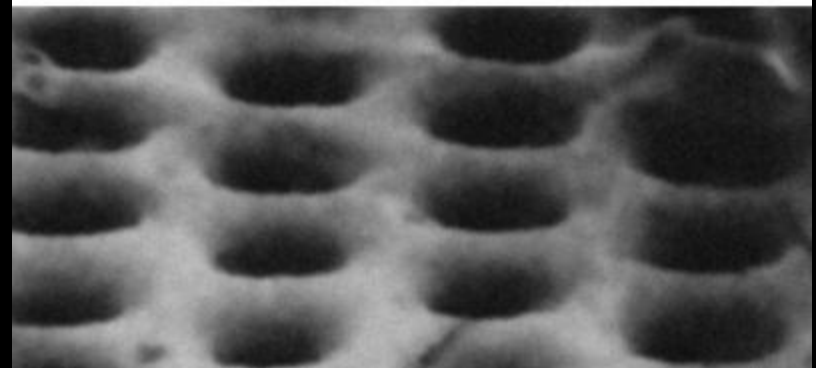
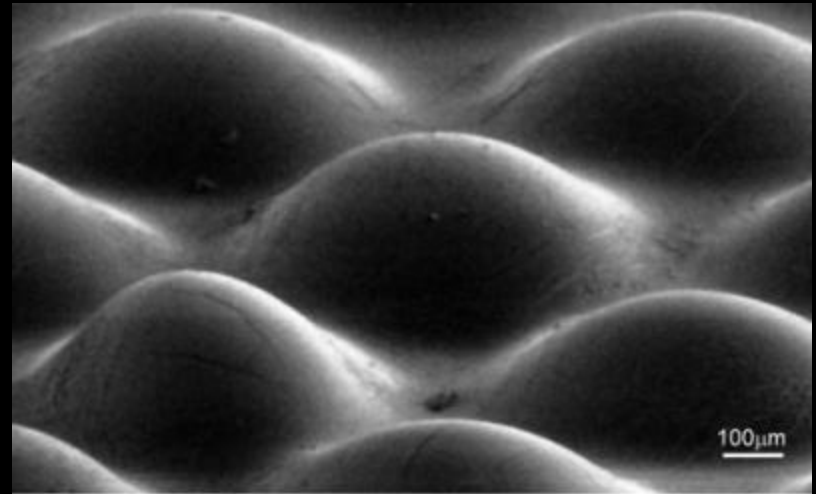






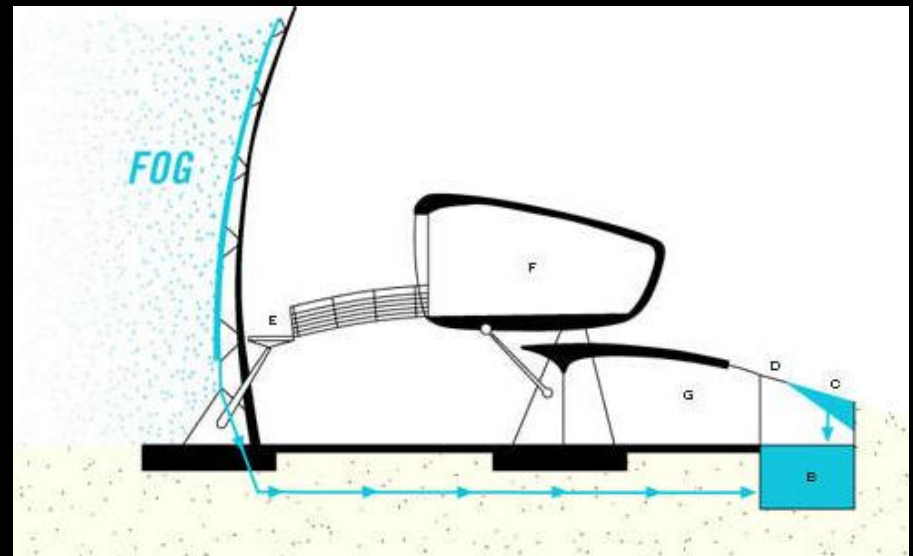










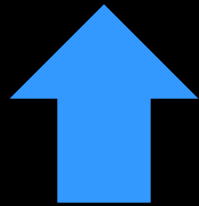
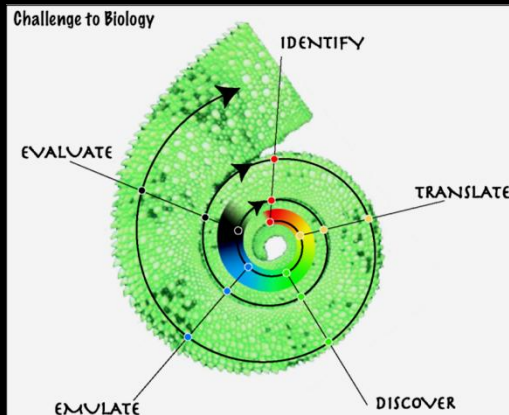




*“What does this
mean for me?”*

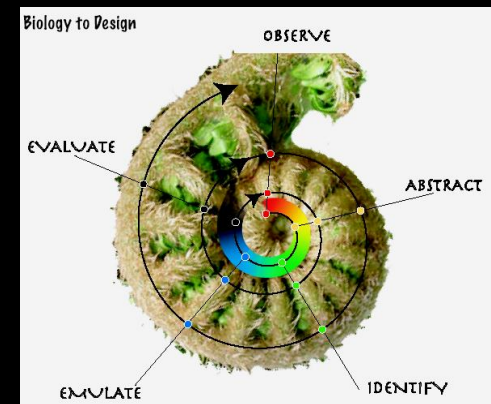


Challenge to Biology

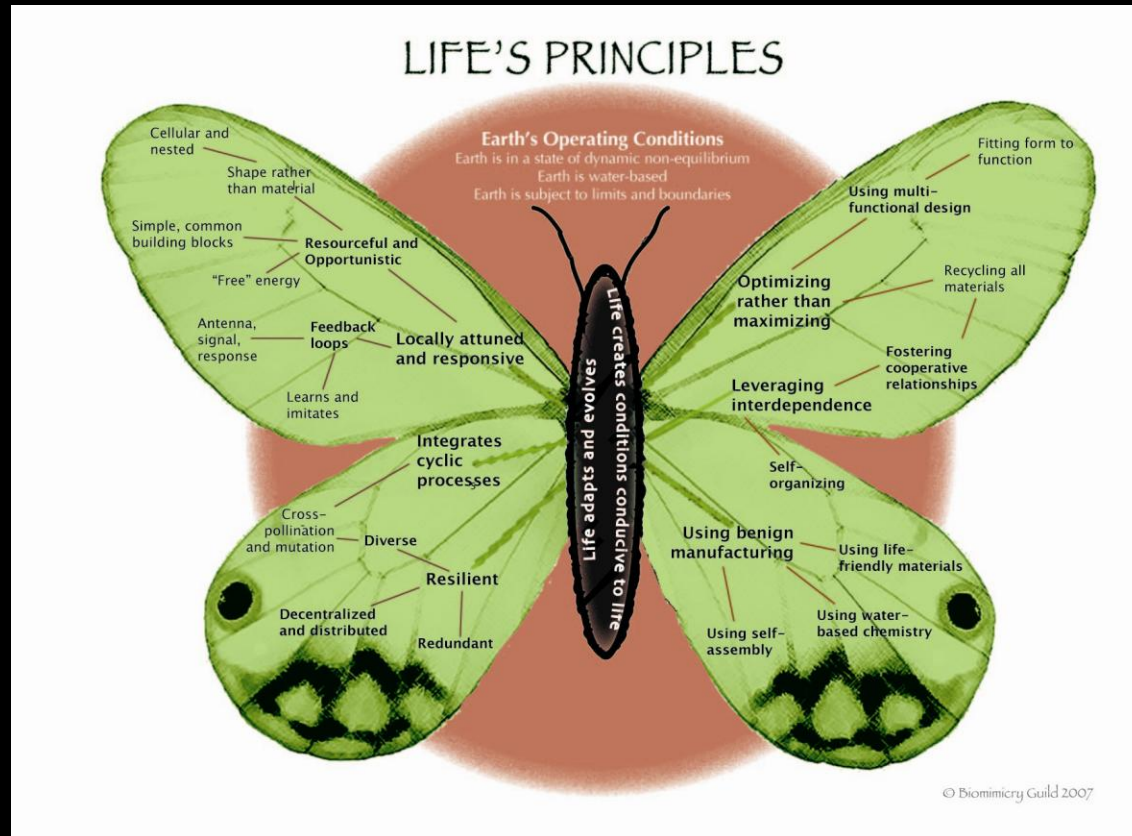


Help designers tap
into nature's
genius
– and yours

Bring your
discoveries to the
design table



Biology to Design

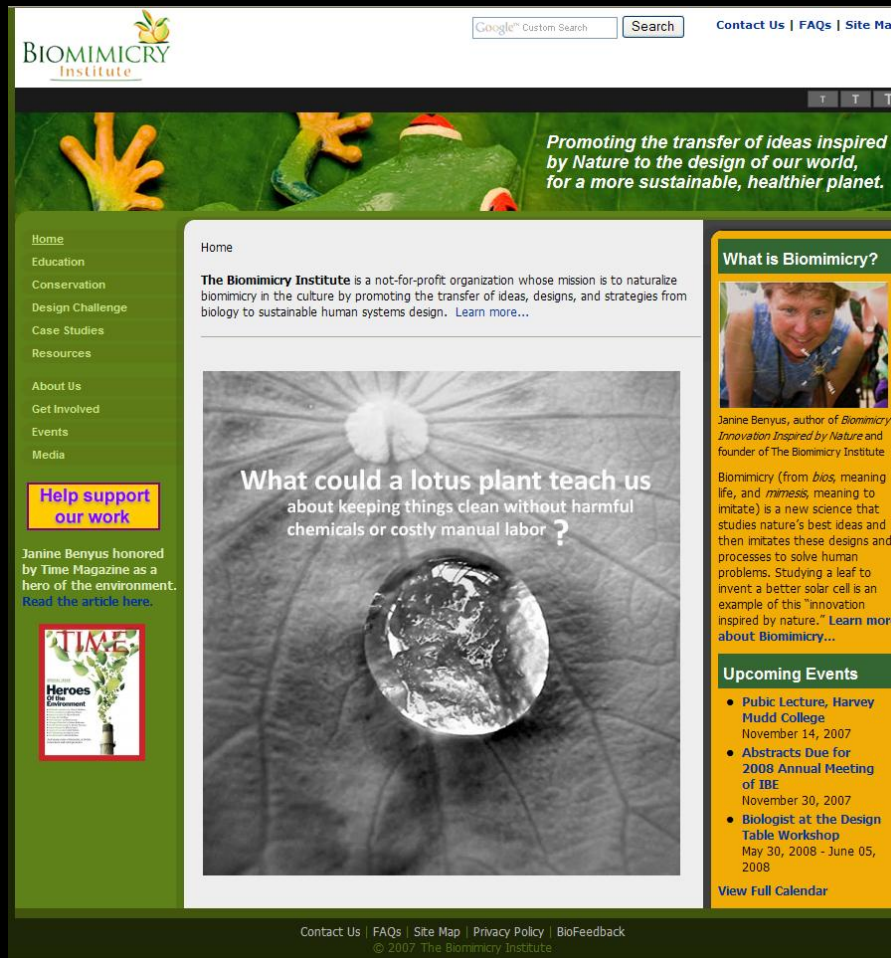


Leverage your work
to achieve sustainability



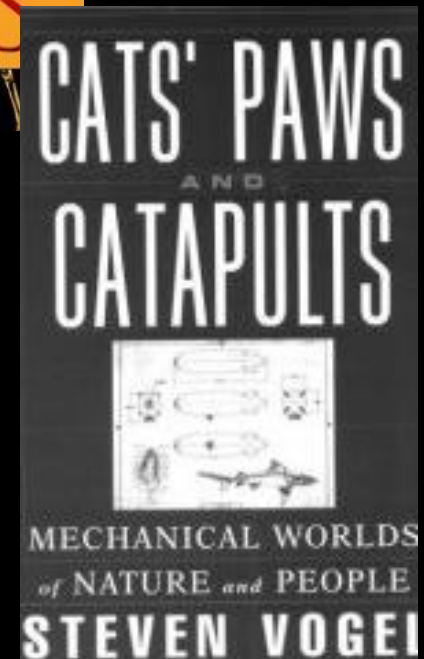
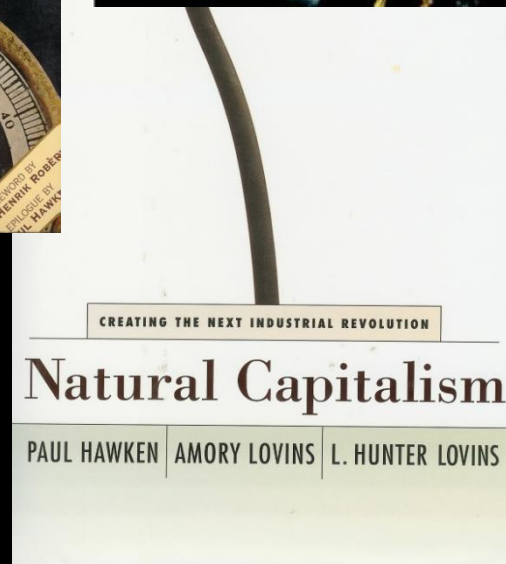
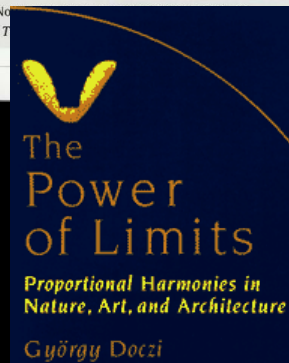
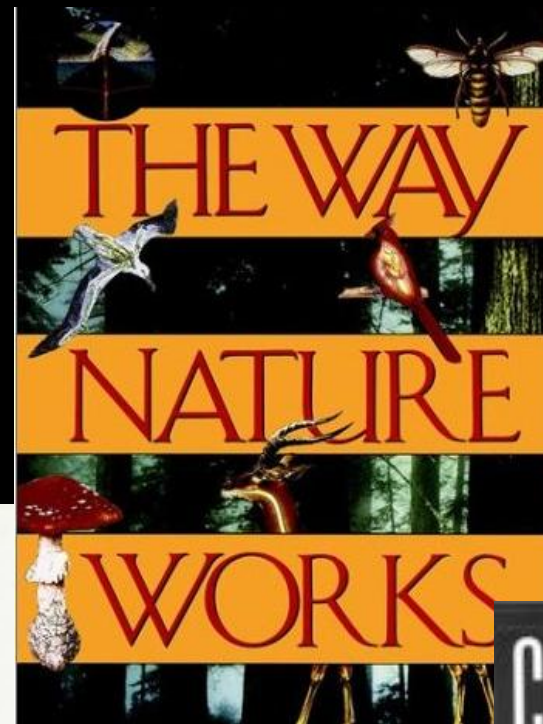
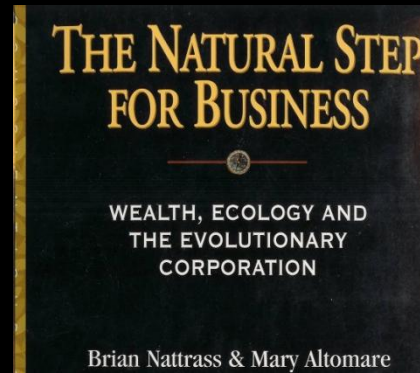
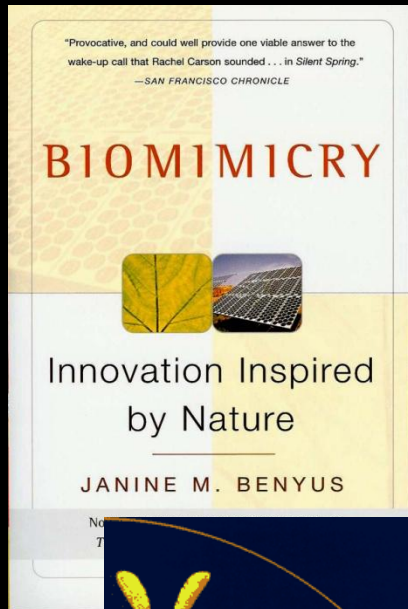
“How can I learn more?”

Visit our website ...



www.biomimicryinstitute.org

Read ...



Take a workshop ...

Biomimicry and Design
Costa Rica



Biologists at the Design Table
Montana



Learn how to ask nature!



Ask nature how to ...



Ask nature how to ...





Ask nature how to ...



Learn how to ask nature,
and then ...

*quiet your cleverness,
be humble,
go outside,
get curious*



Consciously emulate nature's genius



Thank you!



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